Unit 17 Denmore Industrial Estate, Denmore Road, Bridge of Don, Aberdeen AB23 8JW

User Manual
15K Risers All Lengths

This Manual Covers the Following Part Numbers:

114-3064-HV0
114-3065-HV0

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Revision History

Issue, Release Date	Description
Rev A, 18 May 10	Initial Issue
Rev B, 15 Sept 11	Addition of seal ring to redress kit

Safety

WARNING: Trapped air requires considerable time to compress and when it is compressed is highly dangerous. It has enough stored energy to separate parts with considerable force.

All pressure equipment has a particular pressure rating and care must be taken to ensure that no item is used in a situation that may cause its working pressure to be exceeded.

All personnel involved in pressure testing must be formally trained, competent and utilising the appropriate PPE.

Safe Lok devices, where used, should be checked for positional security to avoid unnecessary movement of the collar

Ensure the identification band/plate is fitted and is displaying the correct information as per the Tag Sheet/Index

This equipment and the equipment it is attached to is heavy never position yourself below a suspended load

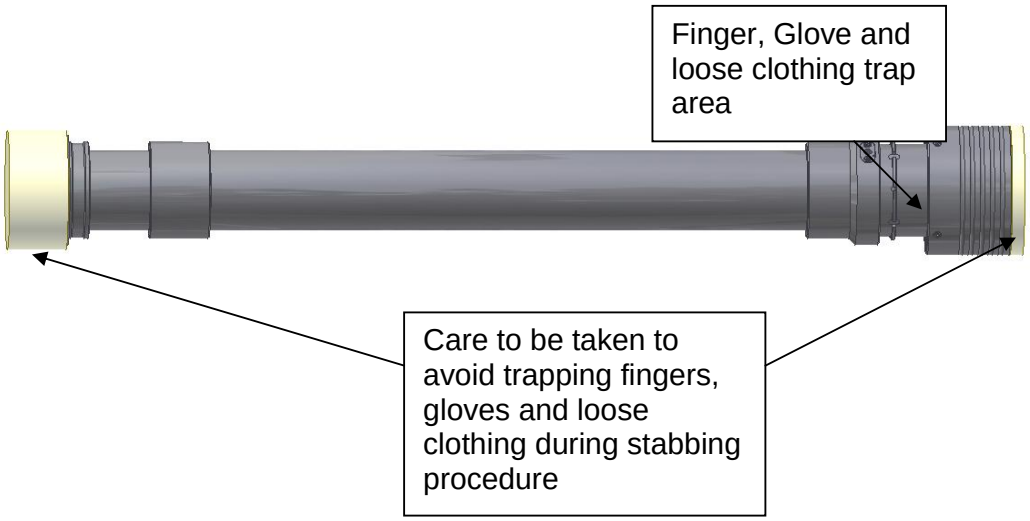
Finger, Glove and loose clothing trap area
Care to be taken to avoid trapping fingers, gloves and loose clothing during stabbing procedure

Figure 1 : Riser Safety

1 Introduction

1.1 General

The Phuel Riser (or Lubricator) is a pressure containing cylinder used when performing wireline operations. Its purpose is to allow the wireline tool string to be raised above the wellhead valve allowing entry and exit from the well bore.

The Riser body is constructed in one. The end connections are quick union style with a quick test facility to allow the connection to be tested before rigging up.

This user manual serves as an introduction to the equipment and contains the relevant specifications, operation, planning and maintenance instructions, parts list and drawings.

1.2 Product Identification

Phuel products are identified by a unique serial number that facilitates full product traceability. Each product is supplied with a documentation pack that contains product certification and material/inspection reports. The serial number is always etched on the surface of the product but can sometimes be difficult to find or read after painting.

A stainless steel band secures the nameplate tag that is stamped with the information shown. This tag should be located in the first instance to ensure that this manual refers to the correct equipment. A customer identification number is also included to allow the customer to track the asset in their system

PHUEL OIL TOOLS LTD
DESCRIPTION & SIZE
CUSTOMER ID No
PHUEL ID No 06-XXX-XX
MWP & SERVICE
TEST DATE

2 Technical Specification

Part Number	114-3064	114-3065
I/D	6.375''	
Length (A)	152'' / 3.86 m	100.82'' / 2.56 m
Make Up Length (B)	147.32'' / 3.74 m	96.14'' / 2.44 m
Weight	3824 lbs / 1734 kg	2648 lbs / 1201 kg
Maximum Working Pressure	15,000 Psi	
End Connection	15-2 Acme Type ½'' NPT	
Test Port Connection	9/16 Autoclave MP	

Table 1 : Technical Data

Figure 2 : Riser

3 Technical Description

3.1 Test Port Saver Sub

The saver sub provides the ability to change a damaged pressure fitting without repairing or replacing a major component. The saver sub is held in place by two socket head cap screws and is sealed by means of an o-ring with a single back up (on the opposite side to the pressure).

An isolation valve is also fitted to the riser body so that the test port can be isolated from the well pressure.

The Saver sub can be replaced with a blank version to avoid the need to fit a pressure blanking plug that would otherwise protrude from Riser assembly.

The seals on the connection have a coiled spring back up integrated into the seal so that there are no loose parts. It is normal to be able to see the coiled spring sometimes protruding through the rubber .

Figure 3 : NPT Saver Sub

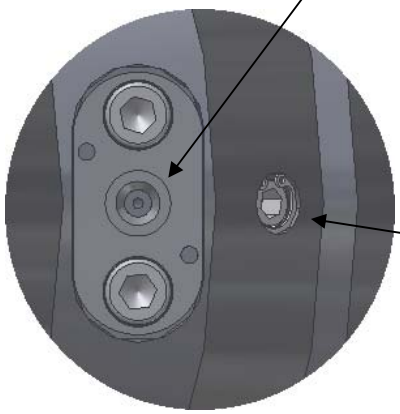

Figure 4: Riser setup showing Saver Sub and Isolation Valve

4 Operation

All operations to be carried out by suitably qualified and competent personnel

4.1 Lifting

Thread protectors should always be fitted when lifting or moving the riser.

4.1.1 Vertical

The Riser should be lifted with a suitable lifting clamp or cap that is rated for the total lifting load, following the instructions for the clamp or cap being used.

If practical leave the thread protectors fitted until ready to make up the connections.

4.1.2 Horizontal

Suitable slings can be wrapped around either end of the riser to allow horizontal lifting for means of transportation or fitting. Always pay attention to the centre of gravity and do not continue to lift if the lubricator is not sitting horizontal as it might slip through the slings.

4.2 Making Up the Riser

- Remove the thread protectors of both ends.
- Inspect the seals for any signs of damage and apply grease if required
- Inspect the mating bore and thread for any signs of damage or debris and clean and grease if necessary
- Stab together the connection and centralise to ensure that the sales are not loaded on one side. Ensure that the connection has stabbed as fully in as possible and that there are no signs of seal debris.
- Make up the collar and use the threads to drive the connection together. Make up the collar fully and then back off by ¼ turn.
- Store the thread protectors in a safe place for use later.
- The sealing integrity of the connection can be tested using a suitable pump. Connect the pump to the fitting on the saver sub.
- Close the isolation valve
- Pressure up against the isolation valve to 5,000 psi and then open the isolation valve and confirm that the pressure drops – this confirms that we are now testing against the two seals.
- Increase the pressure to 15,000 psi (or 1.2 x maximum well pressure) and hold for 10 minutes without leaks. (The volume is small and it may take some time to settle due to trapped air. If this is the case try

bleeding off and re-applying the pressure a few times to remove the trapped air until a successful test is achieved).
- Bleed off the pressure and close the isolation valve.
- Remove the test pump from the connection.

4.3 Breaking the connection

- Ensure that all pressure is bled off. The free movement of the collar is an indication of this.
- Unscrew the collar fully
- Lift up the riser to break the connection. Visually inspect the seal and male end to make sure that no damage has occurred. Report if necessary.
- Fit the thread protector to the bottom of the riser at this time to prevent damage when moving.
- Fit the thread protector to the other thread unless a lifting cap is being used.

4.4 Replacing the Saver Sub

It is not expected that the save sub would need to be replaced during normal operations but if damage occurs to a pressure fitting or a leak is found during pressure testing then this procedure should be followed.

- Ensure that the pressure is bled off.
- Do not remove the pressure fittings at this time as they can be used to provide grip to remove the plug.
- Remove the two socket head cap screws and lock washers. (If they appear unusually tight or difficult to move re-check that the pressure has been removed).
- Grip the pressure fitting and pull out the saver sub with a pulling and rocking motion. If the pressure fitting has been removed already then two ¼-20 UNC screws (not supplied) can be used to jack out the sub.
- Inspect the o-ring and back up for signs of damage and replace if necessary
- Inspect the seal bore for signs of damage and report if necessary
- If required, remove the pressure fitting – clean and inspect the pressure port.
- To re-fit the sub apply grease to the o-ring and seal bore. Ensure that the back up is on the outside of the o-ring (opposite the well pressure)
- Push the sub into the bore by hand as far as possible, ensuring that the part is centralised in the bore. Drive home with a soft faced hammer.
- Fit the screws and washers and tighten to drive the o-ring into the bore.
- Fully tighten the screws.

4.5 Pre Job

- Ensure thread protectors are fitted
- Check maintenance record sheet and ensure the equipment has been maintained by competent personnel
- Check all certification is in date
- Confirm information band is fitted and correct
- Ensure equipment is suitable for the maximum working pressures and services involved
- Ensure ‘O’ ring is seated correctly and there are no signs of damage
- Ensure threads are clean
- Inspect for signs of damage
- Pressure test to 1.2x the maximum well pressure or maximum working pressure.
- Ensure all connections are tight and that the test port is tightly fitted

4.6 During Job

- Avoid excessive movement of the riser stack

4.7 Post Job

- Inspect for signs of damage
- Ensure threads are clean
- Ensure thread protectors are fitted

5 Maintenance

All maintenance to be carried out by suitably qualified and competent personnel

5.1 Introduction

Regular maintenance of the equipment using Phuel redress kits or Phuel approved parts is essential to its continued safe operation. Ensure that the pre and post job operating procedures are followed and that maintenance records are kept.

5.2 Schedule

The maintenance schedule may be governed by international or company standards and the following is considered to be the minimum requirements.

5.2.1 Pre & Post Job

Refer to Section 4.5 and Section 4.7 for details

5.2.2 Yearly

- Inspect the condition of all sealing surfaces and surface coatings
- Re-coat threads and sealing surfaces if necessary. If in doubt contact Phuel Oil Tools Ltd
- Replace all elastomeric seals with items from redress kit (**Error! Reference source not found.**)
- Regrease components
- Pressure test to maximum working pressure in accordance to testing procedure (see 6)
- Inspect paint work and repair as necessary

5.2.3 Five Yearly

- Yearly Maintenance (plus the following)
- Carry out surface NDE on all component threads and damaged surfaces
- Pressure test to maximum working pressure (witnessed by certifying authority where applicable)
- Repaint

5.3 Safety

- Many of the components are heavy and should not be lifted without lifting aids.
- Ensure all pressure testing is carried out in the appropriate testing area by suitably qualified personnel.
- Wear appropriate personal protective equipment.
- Do not over exert yourself while using torque wrenches. Use appropriate mechanical advantages when available.
- Ensure that all tools and equipment are in good condition and are suitable for the intended use.
- Clear up any fluid spills immediately to avoid slips.

5.4 Tools

The following tools are required:

- 3/8 & 3/16 hex Allen keys
- ½'' Spanner
- 7/8'' Spanner (If NPT plug to be fitted)
- 2 x Roller Stands
- Wire Brush

5.5 Redress Procedure

5.5.1 Full Dis-Assembly

- Place riser on the roller stands
- Remove 4 stop pins and washers from the split collar
- Loosen split rings from collar and remove from split collar. Remove split collar from bottom sub
- Remove 2 screws and washers from saver sub and remove.
- Remove the circlip that retains the valve and then remove the isolation valve.
- Remove the valve seat using a 3/16 hex key.
- Inspect all threads, degrease and clean with wire brush if necessary.
- Remove all o-rings and back-ups (only if replacing with new items from a redress kit).

5.5.2 Re-Assembly

- Place the riser body on the roller stands
- Fit ‘O’ ring to test port, grease and fit to bottom sub using 2 screws (and washers)
- Slide the Split Collar over the bottom sub, make up the two halves of the split ring and tighten down until the ends are flush with the collar. Back off slightly to align the holes
- Insert all eight screws (and washers) by hand an d then tighten.
- Fit the two spring seals to the pin end of the connection and lightly grease.
- Fit the valve seat (6) into the body. Fully make up but do not over tighten as the internal hex may be damaged.
- Fit the back-up (7) and then the o-ring (10) to the isolation valve (5) and lightly grease. It is easier to screw the valve into the body upside down to hold the valve while stretching the o-ring and back up.
- Screw the valve the correct way filly into the body.
- Insert the circlip (13) into the groove
- Fit the o-ring (11) and backup (8) to the saver sub (4) with the backup ring on the opposite side to the pressure. Grease the seal and the bore lightly.
- Push the sub into the bore by hand as far as possible, ensuring that the part is centralised in the bore. Drive home with a soft faced hammer.
- Fit the screws and washers and tighten to drive the o-ring into the bore.
- Fully tighten the screws.
- Close the isolation valve and pressure test through the saver sub to maximum working pressure for ten minutes to verify that the seals have been assembled correctly.

5.6 Maintenance Record Sheet

Date Performed	Type of Maintenance	Performed By	Verified By	Comments

Example

Table 2: Maintenance Record

6 Testing

All testing is to be carried out in the designated test area and by suitably qualified and competent personnel.

WARNING: Trapped air requires considerable time to compress and when it is compressed is highly dangerous. It has enough stored energy to separate parts with considerable force

- On completion of reassembly fit the appropriate test caps to either end of the riser and NPT plug to the test port
- Fill with test fluid and bleed off any air in the system
- Apply a pressure of 500 psi and ensure pressure holds for a minimum of 10 minutes
- Increase pressure to Maximum Working Pressure, allow to stabilise and maintain this pressure for a minimum of 15 Minutes ensuring there are no apparent leaks. .
- Bleed off pressure, drain test fluid and dry
- Remove test caps and plug
- Apply coating of de-watering solution to protect the bore and threads
- Fit thread protectors

On completion of all maintenance ensure the maintenance record sheet (Para 5.6) is completed

7 Parts List and Drawings

Item Number	Part Number	Quantity	Description
1	114-2992-480	1	INTEGRAL RISER (15-2 X 3.74m)
2	110-2982-480	1	SPLIT COLLAR 15-2 (SPLIT TYPE)
3	110-2983-480	1	SPLIT RING 15-2
4	110-2986-480	1	SAVER SUB (15K WP)
5	110-3127-316	1	HP ISOLATION VALVE
6	190-2823-PEK	1	VALVE SEAT
7	801-3125-PEK	1	BACKUP (108)
8	801-3126-PEK	1	BACKUP (114)
10	801-0108-V90	1	O-Ring - B.S Size 108
11	801-0114-V80	1	O-Ring - B.S Size 114
12	803-3202-V90	2	SPRING SEAL FOR 15-2 CONNECTION
13	117-2166-STL	1	CIRCLIP INTERNAL 18mm (DHO-18)
14	WNL-0580-316	10	WASHER NORDLOCK (M12)
16	SHC-0585-HTS	10	Soc Hd Cap Size 1/2 Length 1 in
100	910-3191-N66	1	15-2 MALE PROTECTOR
101	910-3192-N66	1	15-2 FEMALE PROTECTOR

Table 3: Parts List for 114-3064-HV0 – Riser 6-3/8 15-2 B x P 3.74m 15K

Item Number	Part Number	Quantity	Description
1	114-3119-480	1	INTEGRAL RISER (15-2 X 2.44m)
2	110-2982-480	1	SPLIT COLLAR 15-2 (SPLIT TYPE)
3	110-2983-480	1	SPLIT RING 15-2
4	110-2986-480	1	SAVER SUB (15K WP)
5	110-3127-316	1	HP ISOLATION VALVE
6	190-2823-PEK	1	VALVE SEAT
7	801-3125-PEK	1	BACKUP (108)
8	801-3126-PEK	1	BACKUP (114)
10	801-0108-V90	1	O-Ring - B.S Size 108
11	801-0114-V80	1	O-Ring - B.S Size 114
12	803-3202-V90	2	SPRING SEAL FOR 15-2 CONNECTION
13	117-2166-STL	1	CIRCLIP INTERNAL 18mm (DHO-18)
14	WNL-0580-316	10	WASHER NORDLOCK (M12)
16	SHC-0585-HTS	10	Soc Hd Cap Size 1/2 Length 1 in
100	910-3191-N66	1	15-2 MALE PROTECTOR
101	910-3192-N66	1	15-2 FEMALE PROTECTOR

Table 4: Parts List for 114-3065-HV0 – Riser 6-3/8 15-2 B x P 2.44m 15K

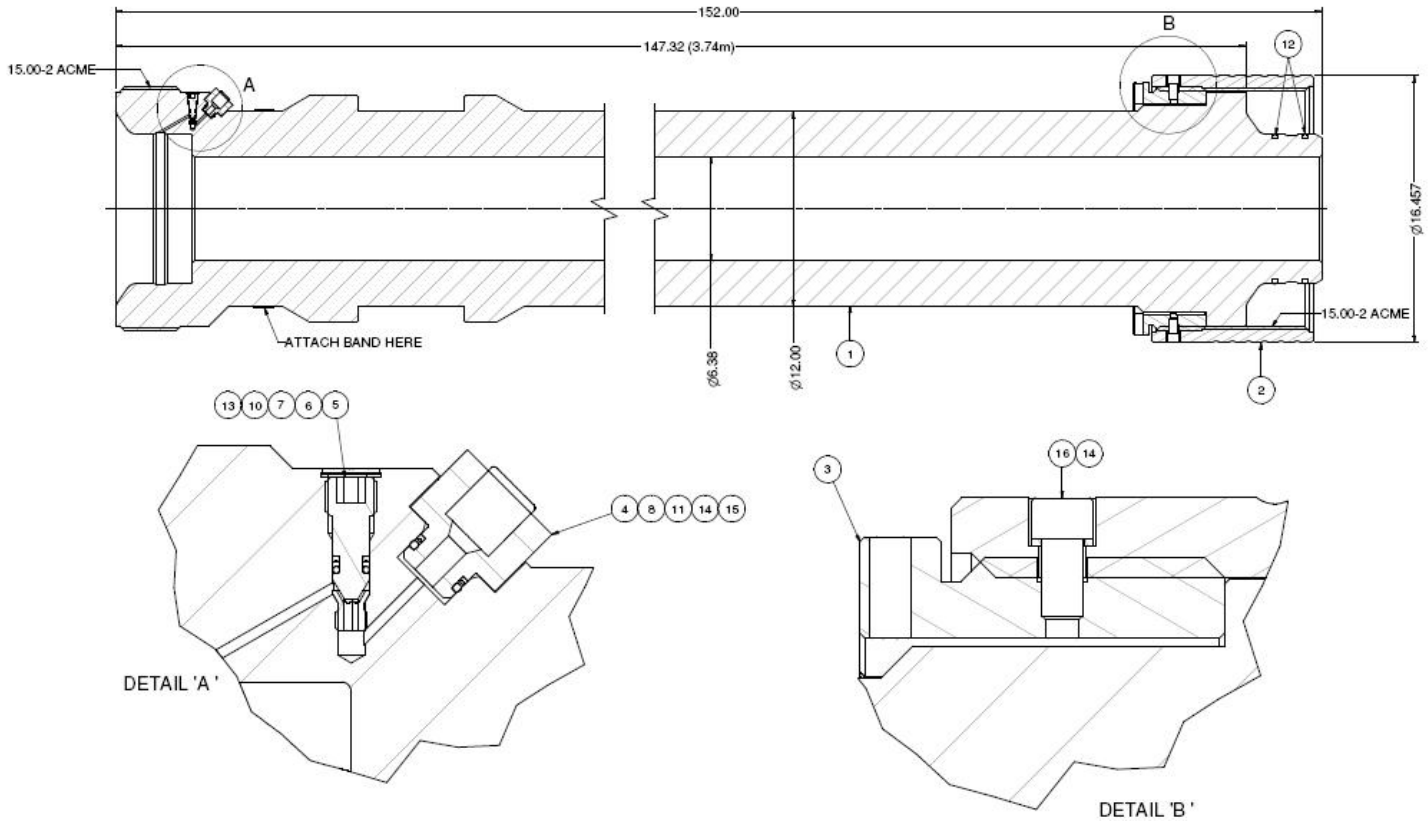

Figure 5: Generic 15K Riser

8 Spares

Use only spares supplied or approved by Phuel Oil Tools Ltd.

It is recommended that sufficient quantities of the following spares be maintained to ensure that the equipment is always available when required.

Elastomeric spares are supplied in Viton material as standard. Many other materials are available please specify when ordering.

8.1.1 Individual Items

Individual items may be ordered as required using the part number specified

Note: O-Rings conform to industry standards and may be substituted with those from other suppliers -– **at the sole risk of the user**.

Item Number	Part Number	Quantity	Description
7	801-3125-PEK	1	BACKUP (108)
8	801-3126-PEK	1	BACKUP (114)
10	801-0108-V90	1	O-Ring - B.S Size 108
11	801-0114-V80	1	O-Ring - B.S Size 114
12	803-3202-V90	2	SPRING SEAL FOR 15-2 CONNECTION

Table 5: RDK-3064

8.1.2 Supporting Equipment

The following test fixtures are available for order directly from Phuel Oil Tools Ltd

Part No.	Item Description	Comments
900-3022-480	HP Blank Test Sub	To replace 110-2986-480
950-2906-STL	Riser Handling Clamp	6.5 Ton SWL
950-3825-STL	Riser Handling Clamp	20 Ton SWL

Table 6 : Supporting Equipment